6.1 Generating Electricity (p.598) 03/03/17

WDYS

WDYT

6.1 Generating Electricity (p.598) 03/03/17

IWBAT trace energy transformations, plan a model for electricity, construct a circuit that lights a bulb, and adjust the brightness of a light bulb with a hand generator. I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

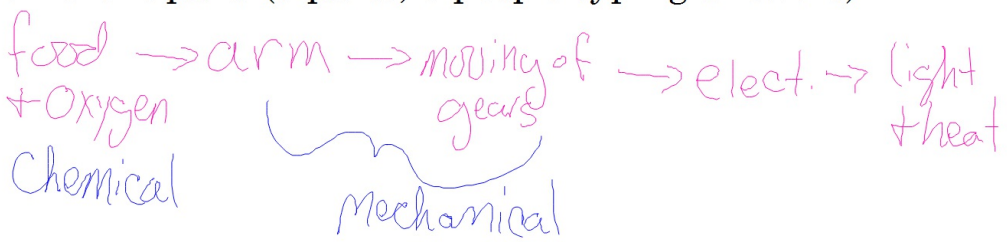
6.1 Generating Electricity (p.598)

Investigate

Answer all non-list questions in complete sentences.

A2. List five for each category (use & eliminate).

B1.a) Draw this on paper to turn in.
B4. Draw this on paper to turn in.
B5. Have each team member write the answer to a different part. (3 parts, 3 people typing answers)



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6.1 Generating Electricity (p.598)

Physics Talk (p.600)

Electrical circuit – a closed loop which includes an energy source, wires, and an energy use

Sources of energy – animals, food, gas, oil, coal, uranium 238 fission, wind, water, solar

turn sources of energy into electricity and turn electricity into heat, light, sound, mechanical

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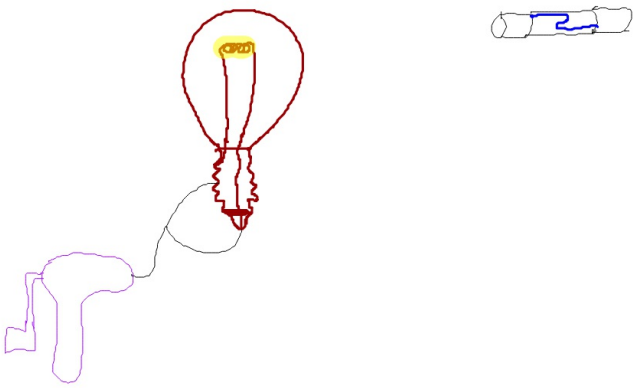
6.1 Generating Electricity (p.598)



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6.1 Generating Electricity (p.598)

Physics to Go (p. 604) # 1, 3-6, 10

IWBAT trace energy transformations, plan a model for electricity, construct a circuit that lights a bulb, and adjust the brightness of a light bulb with a hand generator.

6.2 Modeling Electricity: The Electron Shuffle (p.606) 03/09/17

WDYS

WDYT

6.2 Modeling Electricity: The Electron Shuffle (p.606) 03/09/17

IWBAT develop a physical model for electric current and potential energy and apply the physical model to trace the flow of electric current in series circuits. I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

6.2 Modeling Electricity: The Electron Shuffle (p.606)

Investigate

This requires the *active* participation of EVERYONE.

Coulomb "koo lom"

Joule "jewel"

Ampere "am peer"

IWBAT develop a physical model for electric current and potential energy and apply the physical model to trace the flow of electric current in series circuits.

6.2 Modeling Electricity: The Electron Shuffle (p.606)

Physics Talk (p.609)

The electric charge is not used up, only the energy it carries.
The electric charge gains energy at the battery and loses the energy at the appliance.
Electric potential energy is electric charge waiting to be used.
Electrical circuits have batteries, resistors, and wires.
The battery provides the energy for each Coulomb of charge
The rate of flow of the charge is the current.
Volts measure how much energy the battery provides. $1V = 1J/C$ one volt is one Joule of energy per Coulomb of charge

IWBAT develop a physical model for electric current and potential energy and apply the physical model to trace the flow of electric current in series circuits.

6.2 Modeling Electricity: The Electron Shuffle (p.606)

The current is measured in Amperes (amps)
One Ampere is one Coulomb of charge each second
$1A = 1\ C/s$
A series circuit has only one path for the electrical current to follow.
In a series circuit, the voltage is evenly split between the resistors, if they are identical.
The current is the same through the whole circuit.
The brightness of the bulb depends on the energy delivered per second, measured in Watts.
One Watt is equal to one Joule per second
$1W = 1J/s$
You can increase the brightness of a bulb by increasing the voltage or the current or both.

IWBAT develop a physical model for electric current and potential energy and apply the physical model to trace the flow of electric current in series circuits.

6.2 Modeling Electricity: The Electron Shuffle (p.606)

Checking Up (p.610) #1-4

Physics to Go (p.612) # 1, 2, 3

IWBAT develop a physical model for electric current and potential energy and apply the physical model to trace the flow of electric current in series circuits.

6.3 Series and Parallel Circuits: Lighten Up (p.614) 03/10/17

WDYS

WDYT

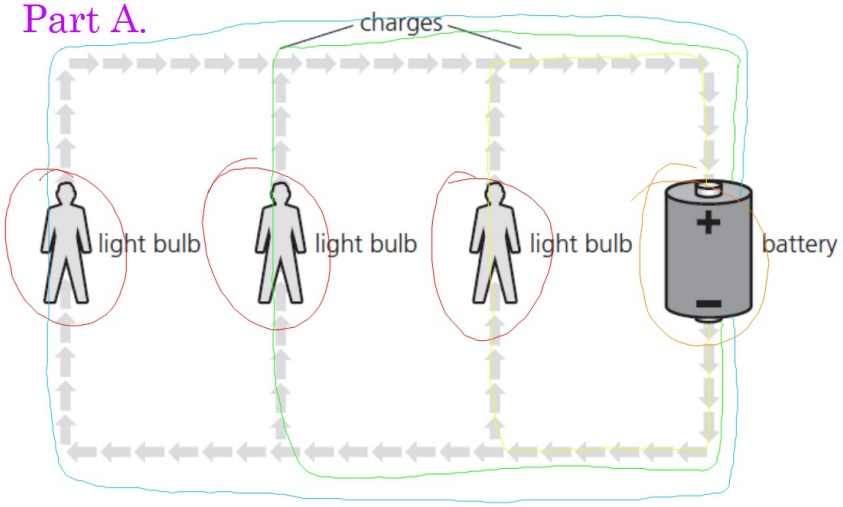
6.3 Series and Parallel Circuits: Lighten Up (p.614) 03/10/17

IWBAT compare series and parallel circuits, recognize generator output limit, and modify the Electron-Shuffle model of electricity.
I will do this through team experiments and discussions with my team and the whole class. I will demonstrate my understanding through answering questions in the Physics Talk, Checking Up, and/or Physics to Go.

6.3 Series and Parallel Circuits: Lighten Up (p.614)

Investigate

Part A.



IWBAT compare series and parallel circuits, recognize generator output limit, and modify the Electron-Shuffle model of electricity.

6.3 Series and Parallel Circuits: Lighten Up (p.614)

Physics Talk (p.617)

Electrons require a complete circuit from the battery to the light and back to the battery.
In a series circuit, if one part of the circuit is broken the whole circuit fails.
In a parallel circuit, each lightbulb has a complete circuit. If one of the light bulbs is non-functioning, the other light bulbs will remain lit due to their own energy pathways.
In a parallel circuit, each lightbulb receives an equal amount of voltage to the battery's output, but they share Coulombs of charge between them (the current is divided).
Each coulomb of charge passes through one resistor.
Three identical resistors would split 3A of current so they each receive 1A.

IWBAT compare series and parallel circuits, recognize generator output limit, and modify the Electron-Shuffle model of electricity.

6.3 Series and Parallel Circuits: Lighten Up (p.614)

There are two electric charges positive (+) and negative (-).
Like charges repel and opposite charges attract.
Protons and electrons contain identical amounts of charge.
Protons are trapped in the atoms.
Electrons flow through the circuit path and deliver the energy.
One Coulomb is approx. the charge of a lightning bolt and contains 6.25×10^{18} electrons
The standard rate of flow of electricity is an Ampere (amp, A) which is one Coulomb of charge per second
Resistance means opposition to the flow of electric charge and is measured in ohms (Ω)
Copper has low resistance which is why we use it in wires.
The energy given to each charge is given in Volts (V).
Batteries or generators provide energy to the electrons.

IWBAT compare series and parallel circuits, recognize generator output limit, and modify the Electron-Shuffle model of electricity.

6.3 Series and Parallel Circuits: Lighten Up (p.614)

Checking Up (p.618) #1-4

Physics to Go (p.621) # 1, 2, 4, 6, 9, ~~& 10~~

IWBAT compare series and parallel circuits, recognize generator output limit, and modify the Electron-Shuffle model of electricity.